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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,108	09/09/2003	Hidegori Usuda	9319G-000556	9949
27572	7590	06/22/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			HAUPT, KRISTY A	
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DATE MAILED: 06/22/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/658,108	<b>Applicant(s)</b> USUDA ET AL.	
	<b>Examiner</b> Kristy A. Haupt	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/9/03, 1/24/05, 4/4/05</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

The Examiner acknowledges the Applicant's request for priority under 35 USC § 119 for Application Number 10/658,108 filed September 9, 2003.

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show reference number 780 in Figure 10 as described in Paragraph 0092, Line 17 of the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 2, 7 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 1, 2, 7 and 9, the Applicant fails to teach "a plurality of control sections" in the disclosure. Therefore, the application has been examined without the limitation in the aforementioned claims.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 7, 8, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshimura et al. JP H10-258504.

3. With respect to claim 1, Yoshimura et al. teaches:

- A plurality of liquid drop ejecting heads (Paragraph 0072, Line 4 and Figure 4, #'s 6-1 to 6-8)
- A liquid drop ejecting device for ejecting a liquid drop to a workpiece (Paragraph 0001, Lines 2-3)
- A plurality of control sections which are provided with circuits for restricting an oscillation of a driving waveform which is applied to the liquid drop ejecting heads (Figure 1 shows circuits, R1-R4, for controlling a driving signal in order to eject a plurality of liquids having different physical properties such as viscosity (Paragraph 0008, Lines 4-5) under predetermined conditions (Paragraph 0019, Lines 7-16))
- A selecting section which selects either one of the plurality of control sections according to a liquid drop which is ejected from the liquid drop ejecting heads (Detecting switch, 15, is provided for selecting the circuit according to the type of liquid (Paragraph 0019, Lines 7-16))
- Wherein the driving waveform is applied to the liquid drop ejecting heads via the control section which is selected by the selecting section (Figure 1, where the signal corresponding to the ink characteristic is supplied to the regulator circuit, 14, by the switch, 15, which connects to the transistor through a resistor to drive the transducer that maintains the predetermined ink-discharge volume (Paragraph 0019, Lines 7-16))

With respect to claim 3, Yoshimura et al. teaches:

- Wherein the selecting section is provided with plural mechanical switches for switching an electric connection between the control section and the liquid drop ejecting heads (Paragraph 0011, Line 6 and Figure 1 shows detecting switch, 15, that is comprised of switches 15a-15d where the signal corresponding to the ink characteristic is supplied to the regulator circuit, 14, by the switch, 15, which connects to the transistor through a resistor to drive the transducer that maintains the predetermined ink-discharge volume (Paragraph 0019, Lines 7-16))

With respect to claim 7, Yoshimura et al. teaches:

- A liquid drop ejecting device for ejecting a liquid drop to a workpiece (Paragraph 0001, Lines 2-3) comprising a plurality of control sections wherein the plurality of control sections are provided with plural liquid drop ejecting heads having different specifications from each other (Regulator circuit, 14, is provided with circuits for controlling a driving signal in order to eject a plurality of liquids having different physical properties such as viscosity (Paragraph 0008, Lines 4-5) under predetermined conditions (Paragraph 0019, Lines 7-9 – Page 12, Lines 1-7))
- A driving device which drives the liquid drop ejecting heads which are disposed (Paragraph 0034, Lines 6-9, Figure 1)

- Each head unit has a circuit for restricting an oscillation of a driving waveform which is selected according to an electric characteristic in the liquid drop ejecting head (Regulator circuit, 14, is provided with circuits for controlling a driving signal in order to eject a plurality of liquids having different physical properties such as viscosity (Paragraph 0008, Lines 4-5) under predetermined conditions (Paragraph 0019, Lines 7-16))

With respect to claim 8, Yoshimura et al. teaches:

- Wherein the control section contains an electric resistance element and an electric capacity element (Figure 12 and Paragraph 0079, Lines 8-9)

With respect to claim 9, Yoshimura et al. teaches:

- Selecting a liquid drop ejecting head which should be driven among plural liquid drop ejecting heads (Paragraph 0041, Lines 3-8) having different specifications from each other (Paragraph 0008, Lines 4-5)
- Selecting a control section among a plurality of control sections which have circuits (Figure 1, R1-R4) for restricting an oscillation of the driving waveform which is applied to the liquid drop ejecting heads according to the liquid drop which is ejected from the liquid drop ejecting heads (Paragraph 0021, Lines 11-16 where one of the resistors of regulator circuit, 14, is selected to control its corresponding circuit that controls the voltage generated for controlling a driving signal in order to eject a plurality

of liquids having different physical properties such as viscosity (Paragraph 0008, Lines 4-5) under predetermined conditions (Paragraph 0019, Lines 7-16))

- Supplying a driving signal to the liquid drop ejecting head which is selected in the step for selecting the liquid drop ejecting head via the control section which is selected in the step for selecting the control section so as to eject the liquid drop (Figure 1 where the drive signal corresponding to the ink characteristic is supplied to the regulator circuit, 14, by the switch, 15, which connects to the transistor through a resistor to drive the transducer in the ejecting head that maintains the predetermined ink-discharge volume (Paragraph 0019, Lines 7-16))

With respect to claim 10, Yoshimura et al. teaches:

- Mounting a head unit which is provided with a liquid drop ejecting head (Paragraph 0028, Lines 3-4) and a control section for restricting an oscillation of a waveform which is applied to a liquid drop ejecting head according to the liquid drop ejecting head and an electric condition therein (Regulator circuit, 14, is provided with circuits for controlling a driving signal in order to eject a plurality of liquids having different physical properties such as viscosity (Paragraph 0008, Lines 4-5) under predetermined conditions (Paragraph 0019, Lines 7-16))



- Supplying a driving signal to the liquid drop ejecting head via the control section which is disposed in the head unit which is mounted in the step for mounting a head unit so as to eject the liquid drop (Figure 1 where the drive signal corresponding to the ink characteristic is supplied to the regulator circuit, 14, by the switch, 15, which connects to the transistor through a resistor to drive the transducer in the ejecting head that maintains the predetermined ink-discharge volume (Paragraph 0019, Lines 7-16))

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. JP H10-258504 in view of Masunaga JP H05-177833.

Yoshimura et al. fails to teach:

With respect to claim 2:

- The selecting section is provided with plural electric switches which are connected to the control section and the liquid drop ejecting head

- The selecting section selects any one of the plural control sections which are connected to the liquid drop ejecting heads by switching a connection of the electric switch

With respect to claim 4:

- Wherein the electric switch is an analogue switch

However, Masunaga teaches:

With respect to claim 2:

- The selecting section is provided with plural electric switches which are connected to the control section and the liquid drop ejecting head (Paragraph 0009, Lines 1-11 and Figure 1 where the analog switch circuit, 6, is provided with plural switches each corresponding to a single resistor)
- The selecting section selects any one of the plural control sections which are connected to the liquid drop ejecting heads by switching a connection of the electric switch (Paragraph 0009, Lines 8-11)

With respect to claim 4:

- Wherein the electric switch is an analogue switch (Paragraph 0009, Line 8)

Therefore, it would have been obvious to one of ordinary skill in the art to use plural electric switches to select a control section in order to adjust a variation in the properties of piezoelectric transducers (Paragraph 0024, Lines 10-12)

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. JP H10-258504 in view of Fujii et al. US 5,975,668.

Yoshimura et al. fails to teach:

- Wherein the mechanical switch is a DIP switch which is operated by the user

However, Fujii et al. teaches:

- Wherein the mechanical switch is a DIP switch which is operated by the user (Column 25, Lines 24-28)

Therefore, it would have been obvious to one of ordinary skill in the art to use a DIP switch as the mechanical switch as it is the selection of a conventionally widely known part.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. JP H10-258504 in view of Park US 6,059,392.

With respect to claim 6, Yoshimura et al. teaches:

- A carriage on which various liquid drop ejecting heads are mounted  
(Paragraph 0028, Lines 1-4)
- A functional liquid supplying structure which supplies functional liquids to the various liquid drop ejecting heads (Paragraph 0032, Lines 1-4)
- An ejection driving control section which controls an ejection driving operation in either one of the liquid drop ejecting heads so as to synchronize the moving structure (Paragraph 0034, Lines 6-9)

Yoshimura et al. fails to teach:

With respect to claim 6:

- A moving structure which moves the various liquid drop ejecting heads via the carriage relative to the workpiece

However, Park teaches:

- A moving structure which moves the various liquid drop ejecting heads via the carriage relative to the workpiece (Column 6, Lines 4-8)

Therefore, it would have been obvious to one of ordinary skill in the art to include a sub-carriage unit in order to enhance the print resolution and improve the quality of printing on media having different properties (Column 2, Lines 1-5)

8. Claims 11, 12, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. JP H10-258504 in view of Shimoda et al. US 6,563,527 B1.

Yoshimura et al. fails to teach:

With respect to claim 11:

- A layer forming device which is provided with the liquid drop ejecting device

With respect to claims 12 and 15:

- A layer forming method comprising the step for forming a layer by ejecting a liquid drop by the liquid drop ejecting device

With respect to claims 13 and 16:

- A method for manufacturing a device which is provided with a workpiece in which functional patterns are formed in predetermined sections therein comprising the step for forming the functional patterns in the workpiece by ejecting the liquid drop by the liquid drop ejecting device

However, Shimoda et al. teaches:

With respect to claim 11:

- A layer forming device which is provided with the liquid drop ejecting device (Column 15, Lines 52-57)

With respect to claims 12 and 15:

- A layer forming method comprising the step for forming a layer (Column 2, Lines 58-59) by ejecting a liquid drop by the liquid drop ejecting device (Column 3, Lines 13-14)

With respect to claims 13 and 16:

- A method for manufacturing a device (Column 2, Lines 24-25) which is provided with a workpiece in which functional patterns are formed in predetermined sections therein (Column 2, Lines 19-22) comprising the step for forming the functional patterns in the workpiece by ejecting the liquid drop by the liquid drop ejecting device (Column 3, Lines 13-14)

Therefore, it would have been obvious to one of ordinary skill in the art to use a layer forming device to form layers with a liquid drop ejecting device in order to increase the amount of information recorded onto the recording medium (Column 2, Lines 5-6)

9. Claims 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. JP H10-258504 in view of Yi et al. US 6,428,151 B1.

With respect to claims 14 and 17:

Yoshimura et al. fails to teach:

- An electronic apparatus which is provided with a device which is manufactured by the liquid drop ejecting device

However, Yi et al. teaches:

- An electronic apparatus which is provided with a device which is manufactured by the liquid drop ejecting device (Column 1, Lines 19-21)

Therefore, it would have been obvious to one of ordinary skill in the art to use the inkjet print head of Yoshimura et al. to manufacture a LCD in order to increase the resolution and decrease the cost (Column 1, Lines 16-19)

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristy A. Haupt whose telephone number is (571) 272-8545. The examiner can normally be reached on M-F 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Art Unit: 2853

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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LAMSON NGUYEN  
PRIMARY EXAMINER  
06/21/05